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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/856,402	10/12/2001	Teruyuki Nakano	E HAR0010	9182
23900	7590	11/04/2004	EXAMINER	
J C PATENTS, INC. 4 VENTURE, SUITE 250 IRVINE, CA 92618			CULBERT, ROBERTS P	
			ART UNIT	PAPER NUMBER
			1763	
DATE MAILED: 11/04/2004				

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/856,402

Applicant(s)

NAKANO ET AL.

Examiner

Roberts Culbert

Art Unit

1763

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 September 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 October 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

Applicant's arguments filed 9/16/04 have been fully considered but they are not persuasive.

Applicant as argued that Dryer fails to teach, "*maintaining a prescribed gap from a periphery of said semiconductor wafer*" as claimed by applicant.

The argument is not persuasive for two reasons. First, although Dryer states that "the wafer edges are in contact with pad 15a" as pointed out by applicant, Dryer also clearly illustrates that a small prescribed gap is maintained between the pad and the periphery of the wafer in Figure 4, and further, that a gap is maintained between the pad and the periphery of the wafer in Figure 5. Second, since a slurry (comprising a chemical solution with abrasive silica particles) is disposed between the pad and the periphery of the wafer, there must be a small gap between the pad and the wafer where the slurry resides.

Applicant as argued that Dryer fails to teach "*wherein said polishing solution is drawn into said gap between the peripheral edge of said semiconductor wafer and said rotary body to conduct non-contact polishing of the peripheral edge of said semiconductor wafer.*"

The argument is not persuasive because as seen in figures 4 and 5 of Dryer, a small gap exists between the polishing pad and the wafer periphery as claimed by applicant. Since Dryer teaches that chemical-mechanical polishing slurry is disposed in the grooves (16) of the polishing pad, the slurry is disposed in the small gaps illustrated in figures 4 and 5 and also in a gap (occupied by the slurry) between the polishing pad and the wafer.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 3 and 4 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent 5,128,281 to Dryer et al.

Regarding Claim 1, Dryer teaches a rotary mechanism (clamping plates 12) holding a wafer 10 while rotating it in a prescribed direction. A rotary body (roller 15) rotates relative to the semiconductor wafer while maintaining a gap (Figs. 4 and 5) from the periphery of the wafer. See Fig. 1. A polishing solution channel holes (20) and polishing solution supply portion (dispenser 19) are also provided.

Regarding claim 31, the rotary mechanism holds a plurality of semiconductor wafers in a stacked state, according to the illustration of Fig. 1 and col. 2, line 29.

Regarding claim 4, Dynamic pressure generating grooves 16 are formed on the peripheral surface of the rotary body facing the periphery of the wafer.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 2, 7, and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 5,128,281 to Dryer in view of U.S. Patent 6,280,294 to Miyamoto.

Art Unit: 1763

The teachings of Dryer were discussed above.

Dryer fails to teach a polishing solution tank and a polishing solution circulation portion.

Miyamoto teaches in col. 5 lines 35-44 that the substrates are polishing as they are immersed in an abrasive liquid 3 and that an abrasive liquid flowing hole 23 is provided to circulate the liquid. Miyamoto teaches that the immersion while polishing method ensures a high precision, high-efficiency polishing result without damaging the polishing surface as the immersion provides a buffer for the wafers.

Thus, it would have been obvious for one of ordinary skill in the art at the time of the claimed invention to provide a polishing solution tank and a polishing solution circulation portion.

Claims 5, 6, 9, and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dryer in view of Miyamoto as applied to claims 2, 7, and 8 above, and further in view of U.S. Patent 4,426,151 to Aguro et al. and U.S. Patent 5,076,026 to Mizuguchi et al.

The teachings of Dryer and Miyamoto were discussed above.

Regarding claims 5 and 9, neither Dryer nor Miyamoto teaches a magnet installed in the rotary body and a magnetic polishing solution. Aguro teaches a magnet installed in rotary body (magnet roller 12). The motivation to provide a magnet installed in the rotary body is to enhance the polishing effect by introducing a magnetic fluid density to the polishing environment.

Aguro fails to teach a magnetic polishing solution. Mizuguchi teaches a magnetic polishing fluid in col. 7, lines 31-36. In col. 3, lines 15-21, Mizuguchi teaches that the use of the magnetic polishing fluid provides a magnetic field and introduces a source of vibration to micro-grind the workpiece. Thus, it would have been obvious for one of ordinary skill in the art at the time of the claimed invention to provide a magnet and magnetic polishing fluid in the polishing apparatus resulting from the combined teachings of Dryer and Miyamoto.

Regarding claims 6 and 10, neither Dryer nor Miyamoto teach that the rotary body is formed of an elastic material. According to the specification page 21 of this present invention such elastic materials that comprise hardness between 7 and 40 Hs include synthetic resin. Aguro teaches in col. 5, lines 50-54 that the material of construction for the scraper member is a synthetic resin. Though Aguro does not

Art Unit: 1763

specifically teach that the roller is also made of synthetic resin one of ordinary skill in the art at the time of the claimed invention would have chosen synthetic resin as it a suitable material of construction with the desired chemical and physical properties needed for the processing environment.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Roberts Culbert whose telephone number is (571) 272-1433. The examiner can normally be reached on Monday-Friday (7:30-4:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory Mills can be reached on (571) 272-1439. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Art Unit: 1763

R. Culbert

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*P. Hassanzadeh
primary Examiner
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